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Luc Seyfried

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ADELI & TOLLEN, LLP

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EXAMINER

MARTEN, JERROD B

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/550,702	Applicant(s) SEYFRIED, LUC	
	Examiner JERROD B. MARTEN	Art Unit 4153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-49 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-49 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 25 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In this case, claim 25 is exactly the same as claim 24.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 18-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 18, 26, and 42, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by

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such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 18, 26, and 42 recite broad recitations then narrower statements of the limitations. Specifically, claim 18 recites the broad limitation "wherein it contains at least 5.0% by volume", and the claim also recites "preferably at least 10% by volume" which is the narrower statement of the range/limitation; claim 26 recites the broad limitation "the cycloparaffinic hydrocarbons cut (B3) is greater than 80%", and the claim also recites "preferably greater than 90% by mass" which is the narrower statement of the range/limitation; claim 42 recites the broad limitation "level of aromatic compounds is less than 10% by volume", and the claim also recites "preferably less than 5% by volume" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 18-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoppe et al. (US 6,451,075) in view of Cantwell et al. (US 3,106,914).

In regard to claim 18, Schoppe et al. discloses a fuel for feeding spark ignition engines fitted in aircraft (Abstract):

- having an F4 octane number at least equal to 130 (see col. 1, Table 1, line 37, where the supercharge rating is the F4 octane number)
- said fuel containing substantial quantities of a first hydrocarbons base (B1) essentially constituted by isoparaffins comprising 6 to 9 carbon atoms (col. 6, Example 1, line 18, 67.0% isooctane)
- a second hydrocarbons base (B2) also constituted by isoparaffins comprising 4 or 5 carbon atoms (see col. 6, Example 1, lines 20-21, 12.0% isopentane, and 3.0% isobutene)

Shoppe et al. does not explicitly disclose the fuel for feeding spark ignition engines fitted in aircraft wherein the composition contains a third base oil (B3) composed of cycloparaffins, comprising 6 to 8 carbon atoms, in a quantity of at least 5%. Further, Schoppe et al. does not explicitly teach that the ratio of the quantities by volume $(B1+B2)/B3$ is greater than 2.0.

Cantwell et al. teaches a composition for a fuel for feeding a spark ignition engine wherein:

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- wherein it contains at least 5.0% by volume of a hydrocarbons base essentially composed of cycloparaffins comprising 6 carbon atoms. (see col. 11, line 50, where the 6 carbon atom hydrocarbon base is cyclohexane)

Schoppe et al. and Cantwell et al. are analogous as both references are drawn to fuel compositions for use in spark-ignition engines.

It would have been obvious to one of ordinary skill in the art at the time of invention replace the 15% portion of aromatic xylene in the fuel composition as disclosed by Schoppe et al. with a cyclohexane portion as taught by Cantwell et al. as it is well known in the art that cycloparaffins can be successfully substituted for aromatic compounds in raising the octane levels of gasoline while being more environmentally friendly (as evidenced by Demirel et al., pg. 83-84). Further, it amounts to nothing more than substituting interchangeable components of fuel in an otherwise known fuel composition to achieve an expected result.

Further, it would have been obvious to one of ordinary skill in the art at the time of invention to expect the combination of modified Schoppe et al. to be capable of obtaining the ratio of the quantities by volume $(B1+B2)/B3$ is greater than 2.0, which the modified composition of Schoppe et al. is capable of (see col. 6, Example 1, lines 18-21, $(B1+B2)/B3 = 4.56$, where the composition of modified Schoppe et al. substitutes a cycloparaffinic base oil for Xylene)

In regard to claim 19, modified Schoppe et al. discloses all claim limitations as set forth above. Further, the fuel composition of modified Schoppe et al. is such that the ratio R of the quantities by volume $(B1+B2)/B3$ is comprised between 2.3 and 19.0 (see

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col. 6, Example 1, lines 18-21, $(B1+B2)/B3 = 4.56$, where the composition of modified Schoppe et al. substitutes a cycloparaffinic base oil for Xylene)

In regard to claim 20, modified Schoppe et al. Discloses all claim limitations as set forth above. Further, Shoppe et al. discloses a fuel for feeding spark ignition engines fitted in aircraft:

- wherein the ratio K of the quantities by volume $B1/B2$ is greater than 2.0 (see col. 6, Example 1, lines 18 and 20-21, where $B1/B2 = 4.47$)

In regard to claim 21, modified Schoppe et al. Discloses all claim limitations as set forth above. Further, Shoppe et al. discloses a fuel for feeding spark ignition engines fitted in aircraft:

- wherein the ratio K of the quantities by volume $B1/B2$ is greater than 2.0 (see col. 6, Example 1, lines 18 and 20-21, where $B1/B2 = 4.47$)

In regard to claim 22, modified Schoppe et al. Discloses all claim limitations as set forth above. Further, Shoppe et al. discloses a fuel for feeding spark ignition engines fitted in aircraft:

- wherein the ratio K of the quantities by volume $B1/B2$ is comprised between 2.3 and 10.6 (see col. 6, Example 1, lines 18 and 20-21, where $B1/B2 = 4.47$)

In regard to claim 23, modified Schoppe et al. Discloses all claim limitations as set forth above. Further, Shoppe et al. discloses a fuel for feeding spark ignition engines fitted in aircraft:

- wherein the ratio K of the quantities by volume $B1/B2$ is comprised between 2.3 and 10.6 (see col. 6, Example 1, lines 18 and 20-21, where $B1/B2 = 4.47$)

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In regard to claim 24-26, modified Schoppe et al. Discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the composition of modified Schoppe et al. is such that the cycloparaffinic hydrocarbons cut (B3) is essentially constituted by cyclohexanes. Further, the composition of modified Schoppe et al. contains a cycloparaffinic base that consists of only cyclohexanes, or 100% cyclohexanes.

In regard to claims 27-29 and 33-34, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the first isoparaffinic hydrocarbons cut (B1) is essentially constituted by isoparaffins with eight carbon atoms. (see col. 6, Example 1, line 18, where the first isoparaffinic hydrocarbon cut is 100% isooctane.)

In regard to claim 30, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the isoparaffinic hydrocarbons containing eight carbon atoms are isooctanes. (col. 6, Example 1, line 18)

In regard to claim 31, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the isoparaffinic hydrocarbons containing eight carbon atoms are isooctanes. (col. 6, Example 1, line 18)

In regard to claim 32, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to

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expect that the fuel composition of modified Schoppe et al. is such that the isoparaffinic hydrocarbons containing eight carbon atoms are isooctanes. (col. 6, Example 1, line 18)

In regard to claim 35 and 38, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the second isoparaffinic hydrocarbons cut (B2) is essentially constituted by isoparaffins with five carbon atoms. (see col. 6, Example 1, lines 20-21, where the B2 cut is 80% isopentanes)

In regard to claim 36, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the second isoparaffinic hydrocarbons cut (B2) is essentially constituted by isoparaffins with five carbon atoms. (see col. 6, Example 1, lines 20-21, where the B2 cut is 80% isopentanes)

In regard to claim 37, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the second isoparaffinic hydrocarbons cut (B2) is essentially constituted by isoparaffins with five carbon atoms. (see col. 6, Example 1, lines 20-21, where the B2 cut is 80% isopentanes)

In regard to claims 39-40, modified Shoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to

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expect that the fuel composition of modified Schoppe et al. is such that the level of isopentanes in the isoparaffinic hydrocarbons cut (B2) with five carbons atoms is 100% as all isopentanes have five carbon atoms.

In regard to claim 41, modified Schoppe et al. discloses all claim limitations as set forth above. Although, Schoppe et al. does not explicitly disclose the fuel where the isoparaffinic hydrocarbon cut containing 5 carbon atoms is replaced by a cut constituted by hydrocarbons containing 4 carbon atoms, it would have been obvious to one of ordinary skill in the art at the time of invention to do so as the octane number of the fuel, is a variable that can be modified (as evidenced by Warnatz et al., pg. 228, Table 16.1), among others, by adjusting the level of isobutane in the fuel, with the octane number of the fuel increasing as the level of isobutane in the fuel increases (as evidenced by Warnatz et al., pg. 228, Table 16.1), the level of isobutane in the fuel would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the level of isobutane in the fuel cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the level of isobutane in the fuel of modified Schoppe et al. to obtain the desired octane number (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

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In regard to claim 42, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that the level of aromatic compounds is less than 10% or 5% by volume as the fuel of modified Schoppe et al. contains no aromatic compounds.

In regard to claims 43-44, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that its benzene content is less than 0.1% by volume, as the fuel composition of modified Schopp et al. contains no benzene.

In regard to claims 45-46, modified Schoppe et al. discloses all claim limitations as set forth above. Further, it would have been obvious to one of ordinary skill in the art to expect that the fuel composition of modified Schoppe et al. is such that its benzene content is less than 0.1% by volume, as the fuel composition of modified Schopp et al. contains no benzene.

In regard to claims 47-48, modified Schoppe et al. discloses all claim limitations as set forth above. Further, Schoppe et al. discloses use of the fuel to feed:

- spark ignition engines of aircraft (see Abstract, where aircraft can be competition vehicles.)

7. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoppe et al. (6,451,075) in view of Cantwell et al. (US 3,106,914), as applied to claim 18, and in further view of Hsu et al. (US 6,183,703).

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In regard to claim 49, modified Schoppe et al. discloses all claim limitations as set forth above.

Modified Schoppe et al. does not explicitly disclose that the fuel can be used to feed a fuel treatment unit, such as a reformer, coupled to a fuel cell.

Hsu et al. teaches a fuel cell with a reformer (see col. 2, lines 55-65) that uses paraffins as a fuel source in a reformer (see col. 6, lines 9-15)

Modified Schoppe et al. and Hsu et al. are analogous as both references are drawn to paraffinic solvents and their methods of use.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the use of a paraffinic fuel in a reformer coupled to a fuel cell with the fuel composition of Schoppe et al. as Schoppe et al. provides a reliable and consistent octane rating and reduces pollution by lead in the fuel as required by Hsu et al. Further, it amounts to nothing more than combining a known fuel composition in a known apparatus to achieve an expected result.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERROD B. MARTEN whose telephone number is (571)270-7066. The examiner can normally be reached on Mon.-Thurs., 7:30 a.m.-5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Basia Ridley can be reached on (571)272-1453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B. M./
Examiner, Art Unit 4153

/Basia Ridley/
Supervisory Patent Examiner, Art Unit 4153